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## Past Fire History of Lemhi County:

### Lemhi County Fire History

Lemhi County will use the Salmon Interface Analysis finding to characterize fire history and fuel conditions/fire risk. The Salmon Interface Ecosystem Analysis Area is located in the landscape that surrounds Salmon, Idaho. The analysis area is approximately 200,000 acres and contains a wide variety of ecosystems, which are reflective of many parts of Lemhi County. In an effort to be consistent with the National Fire Plan and the 10 year Cohesive Strategy, the analysis classified the ecosystems by Fire Regime Groups and Condition Classes (Ref. "Protecting People and Sustaining Resources in Fire Adapted Ecosystems a Cohesive Strategy 2000" The Forest Service Management Response to the General accounting office Report GAO/RCED-99-65 October 13, 2000).

The Fire Regime Groups provide a reference condition regarding how wildfire occurred in the natural landscape prior to European settlement (before 1850). (Ref. Pacific Northwest-General Technical Report. "An Assessment of Ecosystem Components in the Interior Columbia Basin and Portions of the Klamath and Great Basins Volume II", dated: June 1997).

### **FIRE REGIME GROUPS**

**FIRE REGIME GROUP I** is made up of dry conifer forested lands at lower to mid-elevations that support Ponderosa pine, Ponderosa and Douglas-fir, Douglas-fir, and Douglas-fir and Lodge-pole Pine trees. Historically, frequent fires of low fire severity characterized these areas, allowing for larger diameter trees growing in mostly open canopy conditions. Crown fires and high severity fires were uncommon.

**FIRE REGIME GROUP II** is made up of mostly sagebrush grassland ecosystems. Fires would remove the shrub covers and grasses, thereby, allowing forbs to dominate the burned areas until shrubs re-established themselves as the primary vegetation.

**FIRE REGIME GROUP III** occurs at mid to high elevation forested areas and are dominated by Lodge-pole pine, Lodge-pole pine/Sub-alpine fir and sub-alpine fir forests. Historically, these areas were characterized by fires of low, moderate and high severity with a frequency of 35-100 years or more. A wide range in fuel and forest conditions were common resulting in a diversity of landscape pattern.

**FIRE REGIME GROUP IV** occurs at high elevation forested areas generally on steep moist slopes and are dominated by Lodge-pole pine, Lodge-pole pine/Sub-alpine fir forests. Historically, these areas were characterized by fires of moderate to high severity with a frequency of 35-100 years or more. A wide range in fuel and forest conditions were common resulting in a diversity of landscape pattern.

**FIRE REGIME GROUP V** described as fire return frequency greater than 200 years with severe stand replacement, which was generally not present in this portion of Idaho.

The majority of the Wildland/Urban Interface (WUI) in Lemhi County is surrounded by or highly influenced by Fire Regime Groups I and II portions of the landscapes.

**Table 1- Fire Regime Frequency Severity Table**

<i>Fire Regime Group</i>	<i>Frequency (Fire return Intervals)</i>	<i>Severity</i>
I	0-35 years	low severity
II	0-35 years	stand replacement severity
III	35-100 + years	mixed severity
IV	35-100 + years	stand replacement severity
V	> 200 years	stand replacement severity

\* Trends are based on preliminary data from Salmon Interface Watershed Assessment (in progress May 2003).

**CONDITION CLASS 1** characterizes an ecosystem that has retained most of its natural processes and has vegetation that is in mostly natural size, species and distribution.

**CONDITION CLASS 2** are ecosystems that have retained some of their natural processes and have vegetation that moderately reflects natural size, species and distribution.

**CONDITION CLASS 3** are ecosystems that have retained little of their natural processes and have vegetation that moderately reflects natural size, species and distribution. Table II- *Condition Class Description*

<b>Condition Class<sup>1</sup> descriptions</b>		
<b>Condition Class</b>	<b>Fire Regime</b>	<b>Example Management Options</b>
Condition Class 1	Fire regimes are within an historical range and the risk of losing key ecosystem components is low. Vegetation attributes (species composition and structure) are intact and functioning within an historical range.	Where appropriate, these areas can be maintained within the historical fire regime by treatments such as fire use.
Condition Class 2	Fire regimes have been moderately altered from their historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals (either increased or decreased). This results in moderate changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range.	Where appropriate, these areas may need moderate levels of restoration treatments, such as fire use and hand or mechanical treatments, to be restored to the historical fire regime.
Condition Class 3	Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, intensity, severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range.	Where appropriate, these areas may need high levels of restoration treatments, such as hand or mechanical treatments, before fire can be used to restore the historical fire regime.
<sup>1</sup> Current conditions are a function of the degree of departure from historical fire regimes resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, and canopy closure. One or more of the following activities may have caused this departure: fire suppression, timber harvesting, grazing, introduction and establishment of exotic plant species, insects or disease (introduced or native), or other past management activities		

Table

\*Lemhi County trends are based on preliminary data from Salmon Interface Watershed Assessment (in May 2003).

**Table III – Historic Natural Fire Regime Groups for Lemhi County as interpolated From Salmon Interface Watershed Assessment (in May 2003).**

Fire Regime Group.	Salmon Interface Analysis Area.	Estimated trends for north and west portions Lemhi County.*	Estimated trends for south and east portions Lemhi County.*
<b>I</b>	33%	45%	35%
<b>II</b>	14%	5%	15%
<b>III</b>	40%	40%	40%
<b>IV</b>	6%	5%	5%
<b>V</b>	0%	Trace.	Trace.
Other (rock, water, etc...).	7%	5%	5%

\* Trends are based on preliminary data from Salmon Interface Analysis

**Table IV – Historic Natural Fire Regime Group and preliminary current Condition Classes for Lemhi County interpreted from analysis of Salmon Interface Watershed Assessment (in May 2003).**

Estimate Trends for Lemhi County*			
Fire Regime Group	Condition Class 1.	Condition Class 2.	Condition Class 3.
<b>I</b>	0 %	60 %	40 %
<b>II</b>	0 %	5 %	95 %
<b>III</b>	5 %	94 %	1 %
<b>VI</b>	20 %	45 %	35 %
<b>V</b>	Trace	Trace	Trace

\* Trends are based on preliminary data from Salmon Interface Analysis.

In the forested ecosystems, Condition Class 3 are areas that generally are at high risk of crown fires during high fire danger weather conditions.

Condition Class 2 are areas that are generally at high risk of allowing crown fires to spread and often facilitate the sustaining progression of large high severity wildfires by being crown fire bridges between Condition Class 3 patches.

*Fire History map((see map annex)*

**Seasonal Drought Conditions** (see map annex)

### **Lightning Storm Tracking Patterns**

The combination of weather, lightning, and unnatural fuels result in high risk of uncharacteristic wildfire behavior and severity:

July, August and September are, significantly, very hot and dry. Because of these high temperatures and dryness, lightning caused fires account for the majority of wildfire ignitions. With the onset of summer drought; frequent lightning can dangerously line up with prevailing wind patterns, which could result in very fast moving catastrophic fires.

Because of topography, storms generally are brought in from the west or southwest. They are then pushed by prevailing winds, which travel across Idaho and track up through central Idaho and funnel through the Middle Fork, Main Fork and North Fork of the Salmon River. Then the storms continue through our county and are stalled and concentrated at the Continental Divide. Clouds are then hanging with electrical charges sending lightning strikes to the ground and generating ignitions. This often occurs without wetting rains and this process is very representative of Lemhi County.

**Recent fires:**

- Long-Tom Fire (1985) = 74 firefighters were entrapped.
- Lake Mountain Fire 1985.
- Clear Creek Complex (2000) = largest fire in Idaho history and consumed over 300,000 acres
- Twelve Mile Fire 2000 = Two residents seriously burned (one near death).
- Cramer Creek Fire 2003= Two Forest Service Fire Fighter fatalities
- Whittington Fire, 2003 evacuation of 46 residents from Sunset Heights Subdivision.
- Cabin Creek 2004 723 acres,
- Preliminary data of fire on the west half of the Salmon Challis National Forest (SCNF) show an unnaturally high amount of high severity acres burned in fires from 1994 to 2001. (A Fire Severity Study is being conducted by the Salmon- Challis National Forest in 2003.

**Fire History Dates:**

1970's	SCNF - 92,300 acres were burned.
1980's	SCNF - 234,100 acres were burned.
1990's	SCNF - 88,400 acres were burned.
2000/2005	SNF - 483,386 acres were burned

**The negative effects of large high severity fires include:**

- Endangering life and property
- Loss of air quality
- Loss of economic values
- Loss of cultural values
- Loss of wildlife habitat
- Loss of water quality
- Loss of soil productivity
- Invasive noxious weeds
- Drought/Fire/Ecosystem Health Problem. (Ref. "Potential Impact of Drought on the 2003 Wildland Fire Season with Respect to Fire Regimes and Condition Classes" "Climate, Ecosystem and Fire Application (CEFA) Special Report 2003-01. April 15, 2003.

In addition to the above mentioned effects; many areas experience accelerated erosion and mass wasting (landslides), debris flows and loss of economic timber value. Salvaged timber realizes a greater loss of value. Also, the aesthetic value of recreational communities and parks is greatly diminished, thereby creating an additional economic burden on the community.

According to the Salmon-Challis National Forest Archives, lightning caused fires are frequent throughout the counties with most fire activity centralized in and around the Salmon River corridor.

The forested areas adjacent to the Main Fork and the North Fork of the Salmon River, including the greater watersheds of the adjacent drainage, have a long history of fire occurrence. Frequent low-intensity fires were common throughout the history of this county, which prevented large build-ups

of fuel loads. Fire suppression, fire exclusion and environmental factors have contributed to unique and heavy fuel conditions. Consequently, mostly pure stands of Ponderosa Pine now include pervasive stands of Douglas-Fir, which create a ladder fuel effect. Historically, there was little threat of catastrophic crown fire events. The advance of foreign weed species and timber disease, which creates a down and woody fuel load and mixed stands of Ponderosa Pine and Douglas Fir, also contributes to the increasing likelihood of fires exceeding the abilities of initial attack suppression resources. The conditions for catastrophic fire are now prevalent in the counties, as witnessed in 2000 with the advent of the Clear Creek fire.

In recent years the fuels structures have changed dramatically. All other characteristics remain the same, i.e. weather conditions, drought and wind patterns. Ground fires have not burned in a natural pattern throughout the wildland which would cause a thinning effect of the ladder fuels and fast fuels. Conversely, these fuels have been allowed to build-up, thereby creating a dense wildland, which greatly increases the risk for a catastrophic wildfire to occur.

Because of this, when wildfires ignite, they often are more severe because of the unnatural fuels build-up. The fires tend to be hotter and they can not be suppressed as easily. In addition, because of the high intensity heat and controlling wind patterns these wildfires now release more firebrands, causing them to jump firebreaks and creating an incident of further fire devastation. The arrangement of the fuel structures have changed, making it incumbent upon us to modify the fuel structure by implementing fuels reduction, which is now our best avenue for prevention of catastrophic wildland fires.

#### **Crown Fire behavior characteristics in Lemhi County, Idaho.**

The forested ecosystems in Lemhi County are characterized by a dominance of closed canopy multi-layered forest fuel structures. These high risk fuel structure that dominate the landscape combined with the typically very hot and dry weather patterns of the fire season, the unique funneling pattern of lightning storms (ignitions) in the river canyons, the steep terrain, and the persistent winds that result from canyon and river terrain, make Lemhi County a demonstrated location for some of the most extreme fire behavior in the northwestern United States. Extreme crown fire behavior has been a common occurrence in Lemhi County since the later portion of the last century resulting in more than 200 firefighter entrapments since 1979.

Crown fire behavior is displayed on almost all of the wildfires over 1000 acres in size occurring in forested areas. Some crown fires can become very large and turn into extreme crown fire events in a short period of time. When large crown fires move out into the sagebrush ecosystems they can they can spread fire over a large fire front and throw fire brands over long distances, resulting large fast moving sagebrush fires that can quickly overwhelm fire suppression crews even in sagebrush fuel types.

Extreme fire behavior events in Lemhi County have placed firefighter personnel in very dangerous situations. In 1969, the Ship Island Fire displayed extreme unexpected crown fire behavior and rapid fire movement, resulting in the burnover of three fire fighters, which resulted in one firefighter's death. On July 4, 1985, on the Lake Mountain, 85 firefighters were entrapped and deployed personal fire shelters to survive. In September 1985, on the Butte Fire, 118 firefighters were entrapped and 73 personal fire shelters were deployed to survive the fire. Both of these fires were the result of unexpected fast moving crown fire behavior. In 2003, on the Cramer Fire, two firefighters were killed when entrapped by unexpected fast moving crown fire.

Crown fires can have a very fast rate of spread and are known for throwing fire brands long distances out in front of the flaming front, resulting in an even faster fire spread rate. Crown fires have the ability to spread very rapidly and overwhelm all fire suppression forces and effort in their path. The following area examples recent wildfires that displayed rapid crown fire spread events on the Salmon-Challis National Forest: (This list could be longer, but that would require more time to track down the data).

Frog Pond Fire (2004) - spread 5 miles in one afternoon.  
Withington Fire (July 17, 2004) - spread 7 miles in one afternoon.  
Tobias Fire (July 13, 2004) - spread 6 miles in one afternoon.  
Clear Creek Fire - On July 16, 2000, spread 12 miles in one afternoon and then on July 28, made another 12 mile run in one afternoon.